

***Notiohelea*, A New Genus of Biting Midges of the Tribe
Ceratopogonini from Chile**

(Diptera: Ceratopogonidae)

William L. Grogan, Jr.

Dept. of Biological Sciences, Salisbury State College, Salisbury, Maryland 21801

and

Willis W. Wirth

*Systematic Entomology Laboratory, II BIII, Agric. Res. Serv., USDA,
c/o U.S. National Museum, Washington, D.C. 20560*

An unusual biting midge recently collected by M.E. Irwin and L. Stange from southern Chile was found in material submitted for identification by Mr. Saul Frommer of the University of California at Riverside. This specimen is so different from its closest relatives that a new genus is proposed for it. The specimen has been mounted on a microscope slide in phenol-balsam in the manner of Wirth and Marston (1968). For an explanation of general terminology of Ceratopogonidae see Wirth *et al.* (1977).

***Notiohelea*, new genus**

Type-species, *Notiohelea chilensis* Grogan and Wirth, new species.

Etymology. — The generic name is a combination of Greek *notios* (southern) and *heleios* (marsh dweller) referring to the fact that this midge occurs in the southern hemisphere.

Diagnosis. — A genus of biting midges of the tribe Ceratopogonini distinguished from all other ceratopogonid genera by the following combination of characters: Wing slightly infuscated, without pattern; two radial cells present, the second 2.5 times longer than the first and extending to 0.79 of wing length; mandible slender, reduced, without teeth; palpus five-segmented, third segment broad, bearing a large deep round pit; claws small, equal; fourth tarsomeres cylindrical; antenna short, stout (antennal ratio 0.80), the first flagellomere bearing eight sensilla coeloconica; two spermathecae.

Notiohelea keys to couplet 7, the tribe Stilobezziini, and couplet 31, genus *Macrurohelea* Macfie, in Wirth *et al.* (1974). However, *Macrurohelea* has the posterior portion of the female abdomen elongated and bent forward ventrally while the new genus has a normal abdomen. *Macrurohelea* also differs in possessing a well-developed mandible with coarse teeth of the insectivorous type, cordiform fourth tarsomeres, and a slender third palpal segment. Both genera possess sensilla coeloconica on the first flagellomere, a character present in *Ceratopogon* and its relatives (tribe Ceratopogonini) but absent in *Stilobezzia* and its close relatives (tribe Stilobezziini). The fact that

these genera key to the tribe Stilobezziini in Wirth *et al.* (1974) but more closely resemble *Ceratopogon* and its relatives in the tribe Ceratopogonini indicates that these two tribes need revising. We plan to revise the generic allocations for these tribes in a future paper.

Notiohelea also closely resembles *Ceratopogon*, which differs from *Notiohelea* in having three spermathecae, a well-developed mandible, cordiform fourth tarsomeres, and the second radial cell 1.5 times longer than the first. Species of the genus *Isohelea* with two spermathecae differ from *Notiohelea* by having a well-developed mandible, cordiform fourth tarsomeres, and the second radial cell about as long as the first. *Protoculicoides*, described by Boesel (1937) from Cretaceous Canadian amber, has a long costa, extending to 0.87 of wing length, but the radial cells are very narrow and the second radial cell is only 1.5 times longer than the first. This genus also differs from *Notiohelea* by having a long r-m crossvein joining the longitudinal veins at an oblique angle and having distinct humeral pits. *Eohelea*, described by Petrunkevitch (1957) from Oligocene Baltic amber, has a long costa extending to the wing tip and also differs from *Notiohelea* by having long claws. All other genera in the Ceratopogonini differ from *Notiohelea* by either having only one radial cell or a short costa not extending much beyond midlength of the wing.

***Notiohelea chilensis*, new species** (Fig. 1)

Diagnosis. — Since only one species of the genus is known, its diagnosis is that of the genus.

Holotype female. — Wing length 1.33 mm; breadth 0.57 mm. Body moderately stout, nearly bare, uniformly covered with fine pubescence.

Head: Brown. Eyes bare, narrowly separated. Antenna with short scape bearing four pairs of setae; pedicel dark brown; flagellum (Fig. 1A) moderately stout; first flagellomere bearing eight sensilla coeloconica; proximal eight flagellomeres ovoid, each bearing a pair of trichoid sensilla; distal five flagellomeres with lengths gradually increasing distad; flagellomeres with lengths in proportion of 18-11-12-12-13-13-12-12-13-14-16-17-22; antennal ratio 0.80. Palpus (Fig. 1B) five-segmented; moderately long, extending beyond tip of proboscis; segments with lengths in proportion of 8-12-20-9-16; third segment broad, with a large round deep sensory pit bearing numerous large capitate sensilla; palpal ratio 1.82. Proboscis moderately long, 0.56 as long as distance from tormae to base of interocular seta.

Thorax: Brown. Scutum broad and convex, apparently without humeral pits or anterior spine; scutellum with four bristles. Legs moderately slender; fore and hind femora slightly broader than mid femur; hind tibia with four large setae in tibial comb; tarsi as in Fig. 1C; fore tarsus with well developed palisade setae on proximal two tarsomeres, mid tarsus with a pair of large setae at apices of proximal three tarsomeres, hind tarsus with well developed palisade setae on proximal three tarsomeres; fourth tarsomeres subcylindrical; fifth tarsomeres (Fig. 1D) with small, equal claws. Wing (Fig. 1E) slightly infuscated brown; moderately broad, rounded distally, anal angle moderately well developed; surface covered with coarse microtrichia, macrotrichia present only on veins R_1 and distal half of R_{4+5} ; two radial cells present, second 2.5 times longer than first and extending to 0.79 of wing length; media petiolate, vein M_2 complete nearly to base. Halter brown.

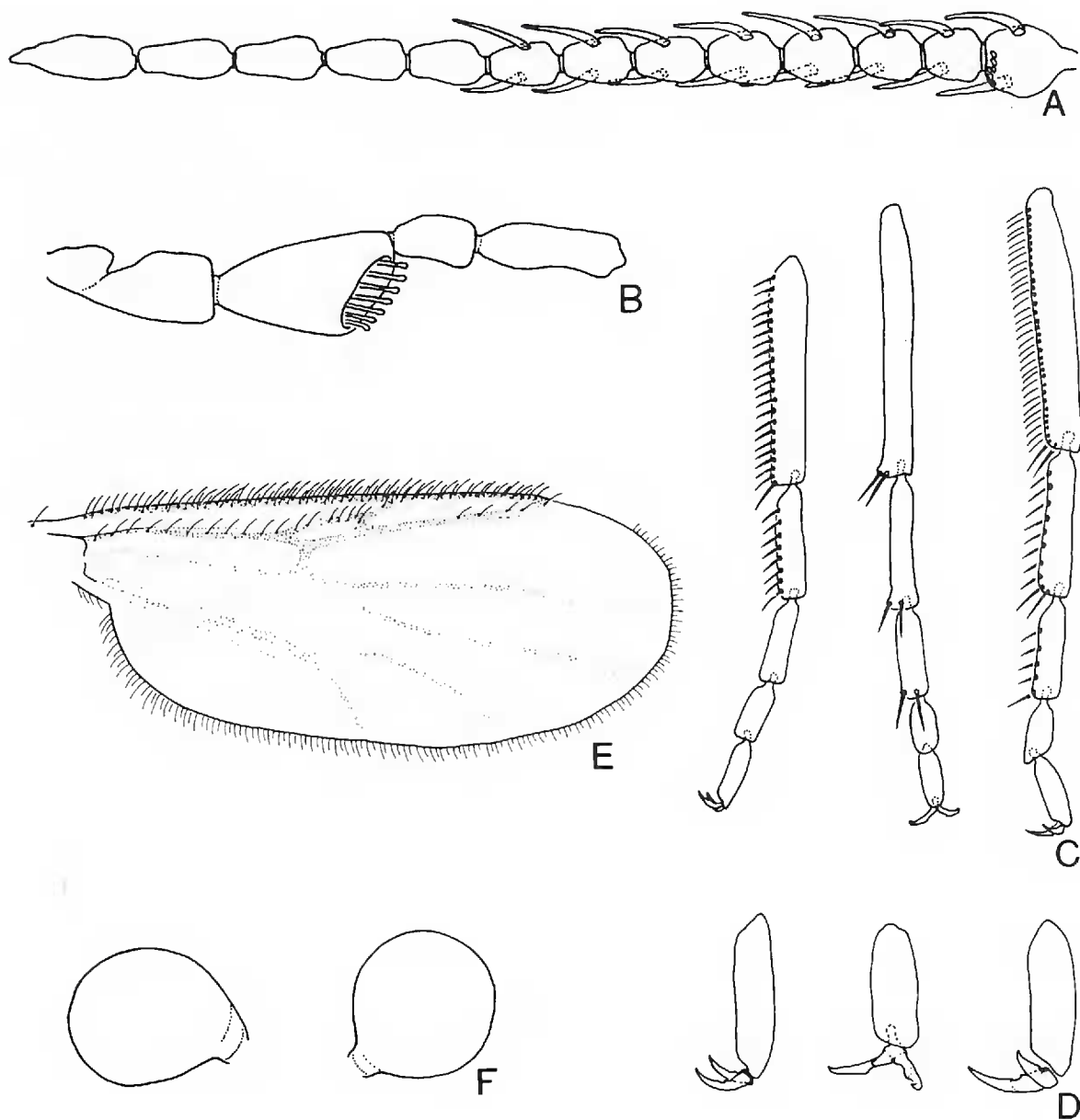


Figure 1. *Notiohelea chilensis* female: A, antennal flagellum; B, palpus; C, tarsi, left to right fore, mid and hind; D, fifth tarsomeres and claws (fore, mid and hind); E, wing; F, spermathecae.

Abdomen: Brown. Moderately broad proximally, tapering distally at segment five; tenth sternum with one pair of large setae. Two spermathecae (Fig. 1F) present; subequal, each measuring 0.038 by 0.030 mm including neck; one spheroid, the other slightly retort shaped, both with broad short necks.

Male. — Unknown.

Etymology. — The specific name refers to Chile, where the type specimen was taken.

Type. — Holotype, female, Chile, Malleco Province, Termas de Rio Blanco (ca. 38° S lat.), 1080 M, 22 January 1967, M.E. Irwin and L. Stange (deposited in the California Academy of Sciences, San Francisco).

Notiohelea is somewhat unusual in possessing a large palpal pit and sensilla coeloconica but having a reduced mandible. Palpal pits and sensilla coeloconica are thought to be chemoreceptors to aid midges in locating food organisms. In the Culicoidini these are usually warm-blooded vertebrates, and in the Ceratopogonini they are

nematocerous Diptera, including other ceratopogonids. If *Notiohelea* is incapable of taking a blood meal, as it appears to be, then the need for such a large palpal pit is unknown. The fact that it has such a structure suggests that its ancestors probably took blood meals. The palpal pit may still aid it in locating a source of nectar on which to feed.

Notiohelea is probably a plesiotypic relictual genus as compared to most of the other genera in the Ceratopogonini. The large, round, palpal pit and small, equal claws are reminiscent of these structures in the Culicoidini and suggest that *Notiohelea* may be an annectant form linking that tribe with the Ceratopogonini. This agrees well with Downes' (1977) statement that the Culicoidini are the most plesiotypic group in the Ceratopogoninae. The exact relationship of *Notiohelea* to other genera may be better understood when the male is discovered, at which time its genitalia may be compared to those of other taxa.

Literature Cited

- Boesel, M.W.** 1937. Order Diptera. Family Chironomidae. *In*: F.W. Carpenter, *et al.*, Insects and arachnids from Canadian amber. Univ. Toronto Stud. Geol. Ser. no. 40: 44-55.
- Downes, J.A.** 1977. Evolution of feeding habits in Ceratopogonidae. *Mosquito News* 37: 279-280.
- Petrunkevitch, A.** 1957. *Eohelea*, n. gen., n. sp., a striking example of paramorphism in an amber biting midge. *J. Paleont.* 31:208-214.
- Wirth, W.W., and N. Marston.** 1968. A method for mounting small insects on microscope slides in Canada balsam. *Ann. Entomol. Soc. Amer.* 61: 783-784.
- Wirth, W.W., N.C. Ratanaworabhan, and F.S. Blanton.** 1974. Synopsis of the genera of Ceratopogonidae (Diptera). *Ann. Parasit.* 49: 595-613.
- Wirth, W.W., N.C. Ratanaworabhan, and D.H. Messersmith.** 1977. Natural history of Plummérs Island, Maryland, XXII. Biting midges (Diptera: Ceratopogonidae). 1. Introduction and key to genera. *Proc. Biol. Soc. Washington* 90: 615-647.